

291 Key to 5.5 - 5.9 Rev (w/o 5.8 questions)

$$11. \sqrt[5]{\frac{16}{9}} = \sqrt[5]{\frac{4}{3}} \quad 11, 13, 15$$

$$13. \sqrt[5]{-32} = \sqrt[5]{-2^5} = -2$$

$$15. \sqrt[4]{a^{16}b^8} = a^4b^2$$

$$5.6 \quad 2, 4, 5, 7, 14, 18, 22, 25, 27, 30$$

$$2. \sqrt[4]{12} = 7 \cdot 2\sqrt{3} = 14\sqrt{3}$$

$$4. \sqrt{5r^5} = r^2\sqrt{5r}$$

$$5. \sqrt[4]{7^8x^5y^6} = 7^2 \times y \sqrt[4]{x^5y^2} = 49xy\sqrt[4]{x^5y^2}$$

$$7. \sqrt{18} - \sqrt{50} = 3\sqrt{2} - 5\sqrt{2} = -2\sqrt{2}$$

$$14. (5+\sqrt{2})(3+\sqrt{3}) = 15 + 5\sqrt{3} + 3\sqrt{2} + \sqrt{6}$$

$$18. (\sqrt{8} + \sqrt{13})^2 = 8 + 2\sqrt{8 \cdot 13} + 13 = 21 + 4\sqrt{26}$$

$$22. \frac{\sqrt{18}}{\sqrt{32}} = \sqrt{\frac{18}{32}} = \sqrt{\frac{9}{16}} = \frac{3}{4}$$

$$25. \sqrt[5]{\frac{32}{a^4}} = \frac{2}{\sqrt[5]{a^4}} \cdot \frac{\sqrt[5]{a}}{\sqrt[5]{a}} = \frac{2\sqrt[5]{a}}{a}$$

$$27. \frac{r}{r^{\frac{5}{3}}} = \frac{r^{\frac{3}{3}}}{r^{\frac{5}{3}}} = \frac{1}{r^{\frac{2}{3}}} = \frac{1}{\sqrt[3]{r^2}} \cdot \frac{\sqrt[3]{r}}{\sqrt[3]{r}} = \frac{\sqrt[3]{r}}{r}$$

$$30. \sqrt[3]{\sqrt{81}} = \sqrt[3]{9}$$

$$27. \frac{5}{3-\sqrt{10}} \cdot \frac{3+\sqrt{10}}{3+\sqrt{10}} = \frac{15+5\sqrt{10}}{-1} = -15-5\sqrt{10}$$

$$30. \frac{1-\sqrt{3}}{1+\sqrt{8}} \cdot \frac{1-\sqrt{8}}{1-\sqrt{8}} = \frac{1-\sqrt{8}-\sqrt{3}+\sqrt{24}}{-7} = \frac{1-2\sqrt{2}-\sqrt{3}+2\sqrt{6}}{-7} \text{ OR } \frac{-1+2\sqrt{2}+\sqrt{3}-2\sqrt{6}}{7}$$

5.7 1, 3, 5, 6, 17, 20, 21, 24, 27-29
 1. $\sqrt[3]{10}$ 3. $\sqrt[3]{a^2}$ 5. $35^{1/2}$ 6. $32^{1/4}$ or $2^{5/4}$

17. $7^{2/4} \cdot 7^{4/4} = 7^{6/4} = \boxed{7}$ 20. $x^{2/6} \cdot x^{8/6} = x^{10/6} = \boxed{x^2}$

21. $m^{2/3} \cdot m^{4/3} = m^{6/3} = \boxed{m\sqrt[3]{m}}$ 24. $\frac{7^{3/4}}{7^{5/3}} \cdot 7^{\frac{9}{12} - \frac{20}{12}} = 7^{-1/2} =$

27. $\frac{r}{r^{2/6}} = \frac{1}{r^{2/6}} = \frac{1}{\sqrt[6]{r^2}} \cdot \frac{\sqrt[6]{r^3}}{\sqrt[6]{r^3}} = \boxed{\frac{\sqrt[6]{r^3}}{r}}$ $\frac{1}{\sqrt[12]{7^{11}}} \cdot \frac{\sqrt[12]{7}}{\sqrt[12]{7}} = \boxed{\frac{\sqrt[12]{7}}{7}}$

28. $\sqrt[4]{36} = \sqrt{\sqrt{36}} = \boxed{\sqrt{6}}$ 29. $\sqrt[4]{9a^2} = \sqrt{\sqrt{9a^2}} = \sqrt{3a}$

5.9 1, 2, 4, 8, 10, 18, 19
 1. $\sqrt{-289} = \boxed{17i}$ 2. $\sqrt{\frac{-25}{121}} = \boxed{\frac{5i}{11}}$ 4. $\sqrt{\frac{-28t^6}{27s^5}} = \frac{2it^3\sqrt{7}}{3s^2\sqrt{3s}}$

8. $-i^{22}$

$-(i^2)^{11}$

$-(-1) = \boxed{1}$

10.

$(14-5i) + (-8+19i)$

$\boxed{6+14i}$

$\frac{2it^3\sqrt{7}}{3s^2\sqrt{3s}} \cdot \frac{\sqrt{3s}}{\sqrt{3s}} = \boxed{\frac{2it^3\sqrt{21s}}{9s^3}}$

18. $\frac{3-7i}{5+4i} \cdot \frac{(5-4i)}{(5-4i)} = \frac{15-12i-35i+28i^2}{25-16i^2} = \boxed{\frac{-13-47i}{41}}$

19. $x^2 + 8 = 3$

$x^2 = -5$

$\boxed{x = \pm i\sqrt{5}}$